

Amendments to the claims:

1.-17 (canceled)

18. (currently amended)) A communication network comprising at least three nodes interconnected by at least two distinct communication links and control means for controlling operation of each node, wherein:

each of said communication links has at least two electrical conductors;

each of said communication links connects two of said nodes and is operative to communicate in a half-duplex mode;

at least one of said nodes is couplable to a payload;

wherein at least a first one of said nodes has first and second line couplers and signal transfer means controlled by said control means for controlling transfer of data to and from each of said line couplers;

each of said line couplers is coupled to another one of said nodes by a respective one of said communication links;
and

said control means are operative for controlling said signal transfer means of at least said first one of said nodes to establish a selected one of a plurality of operating modes, including: the network has at least one distinct state in which one of said nodes is in a data generating mode in which data is generated in said first one of said nodes and transferred to only a selected one of said line couplers; and said one of said nodes transmits data to at least another one of said nodes connected to said one of said nodes by at least one communication link connected thereto and simultaneously at least a further one of said nodes is in a repeating mode in which only data received at one of said line couplers is repeated without format change to the other one of said line

~~couplers said further one of said nodes repeats data received via one communication link to all other communication links.~~

19. (currently amended) The network as in claim 18, wherein another one of said operating modes is said other one of said nodes is in a receiving mode wherein said first one of said nodes receives data in one or more communication links.

20. (previously presented) The network as in claim 18 wherein said nodes are interconnected by said links to cause said network to have a linear topology.

21. (previously presented) The network as in claim 18, wherein said nodes are interconnected by said links to cause said network to have a circular topology.

22. (previously presented) The network as in claim 18, further comprising at least one source of electrical power distributed to said nodes via said communication links.

23. (previously presented) The network as in claim 22, wherein said electrical conductors are operative for distributing both electrical power from said source and the data communication signals.

24. (canceled)

25. (currently amended) The network as in claim 2418, wherein said ~~network controller~~~~control~~ means is operative for selecting said mode~~s~~ the operating mode of said first one of said nodes via signals transported by the local area network.

26. (previously presented) The network as in claim 18, wherein at least two of said nodes are sequentially selected to operate in the data generating mode.

27. (canceled)

28. (currently amended)) The network as in claim 18, wherein at least said first one of said nodes comprises, is connected to ~~two of said communication links and, for repeating data received via one communication link, said at least one of said nodes comprises~~ a repeater connected between said ~~two of said communication links~~first and second line couplers, said repeater being controllable to repeat data in a selected direction between said ~~two of said communication links~~first and second line couplers.

29. (previously presented) A node for distributing data communication, sensing, and control signals in a local area network, the node comprising:

a first line coupler connectable to a first communication link;

a second line coupler connectable to a second communication link;

a power supply having a source of electrical power; and

a control, logic, and processing unit,

wherein said node is made switchable under control of said control, logic, and processing unit into a first state that allows data to be repeated only in a direction from said first link to said second link, and a second state that allows data to be repeated only from said second link to said first link.

30. (previously presented) The node as in claim 29, further comprising at least one receiver connected to one of said communication links operative to receive data therefrom.

31. (previously presented) The node as in claim 29, wherein said node is operative in a mode in which data is transmitted to at least one of said communication links.

32. (previously presented) The node as in claim 29, further comprising at least one payload interface.

33. (currently amended) The node as in claim 3332, further comprising a device selected from a group consisting of sensors, actuators, and data terminal equipment connected to said payload interface.
